

Figure 1a

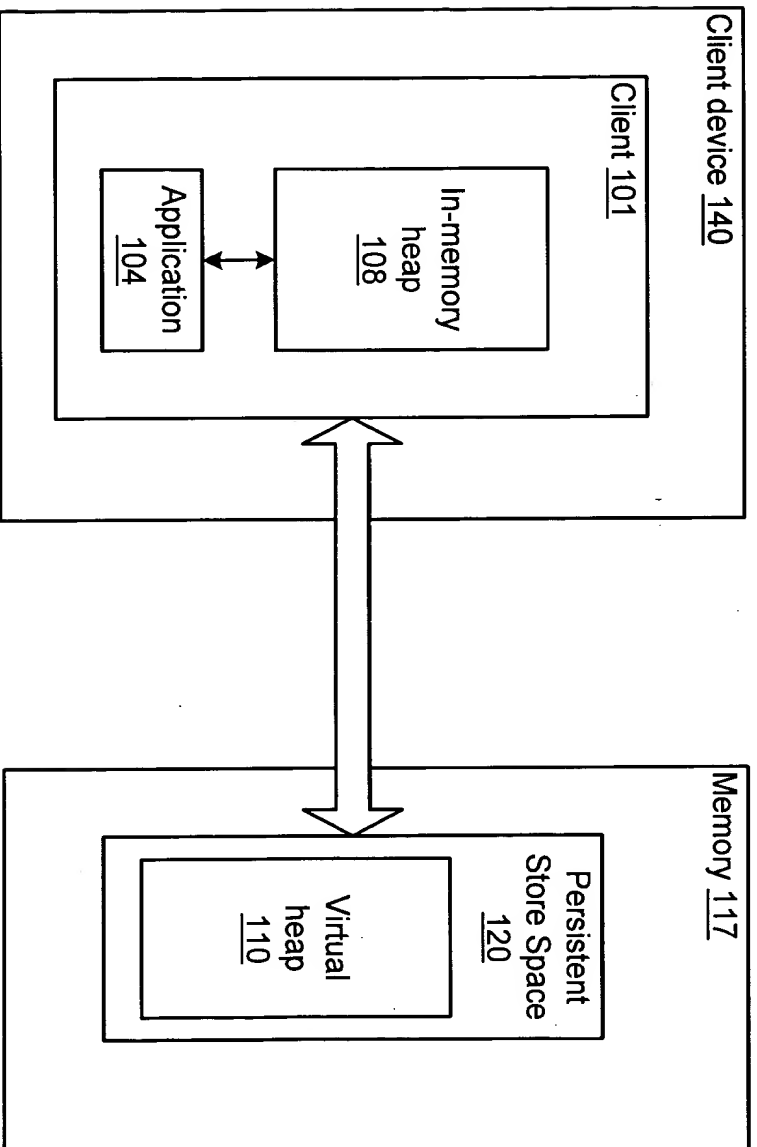


Figure 1b

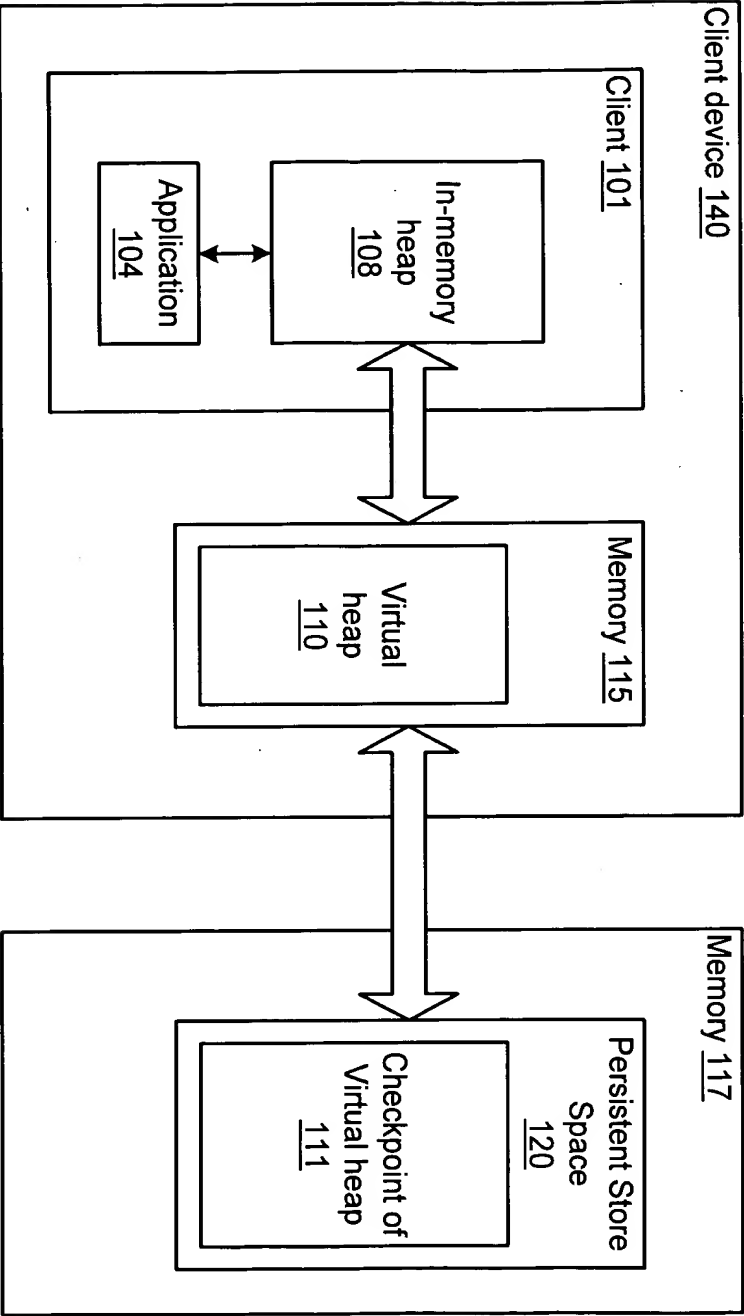


Figure 1c

FIG. 1c is a block diagram of a client device 140, which includes a client 101 and a memory 115. The client 101 includes an in-memory heap 108 and an application 104. The memory 115 includes a virtual heap 110. The in-memory heap 108 is connected to the virtual heap 110. The virtual heap 110 is connected to a checkpoint of virtual heap 111, which is stored in a persistent store space 120.

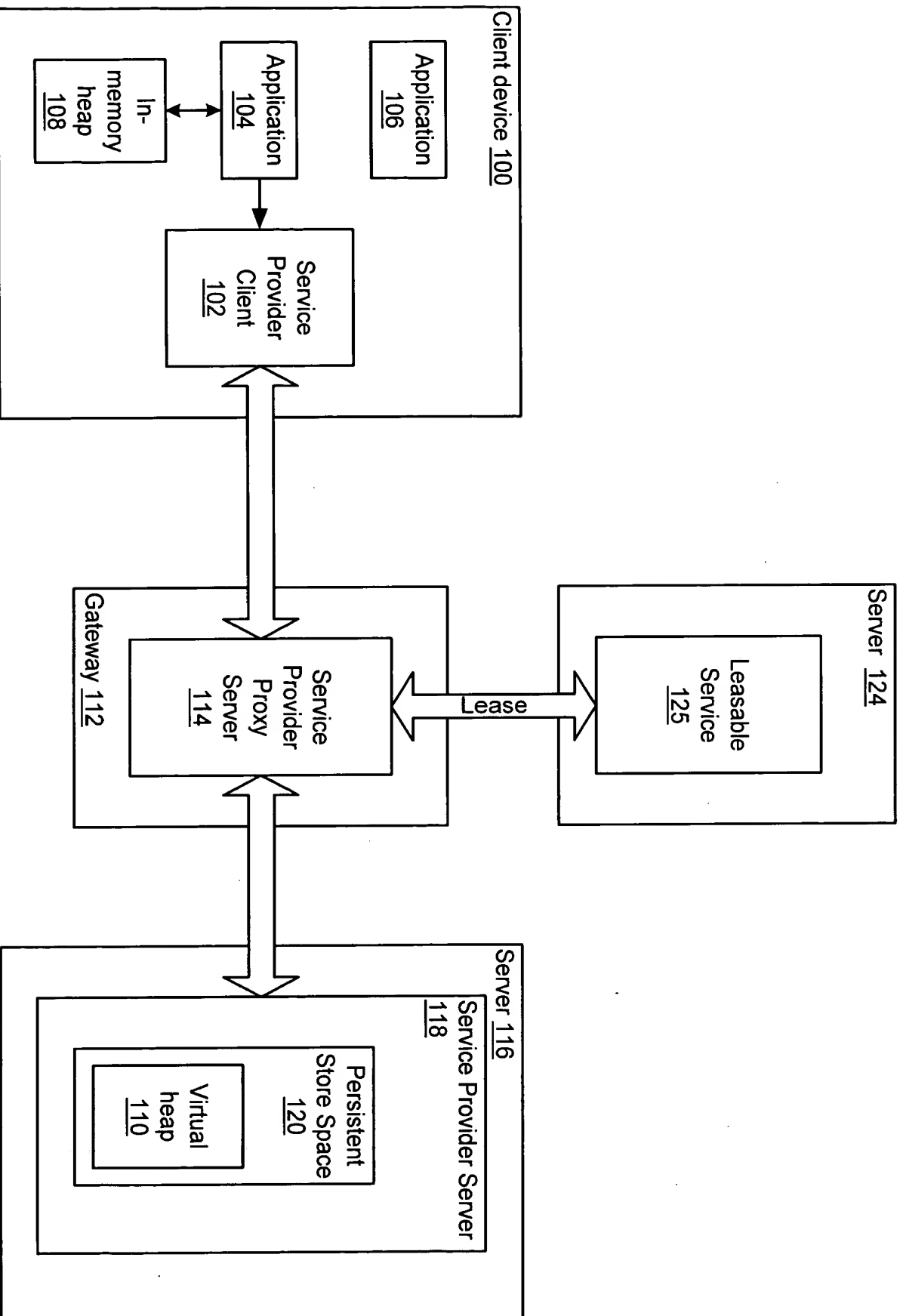


Figure 1d

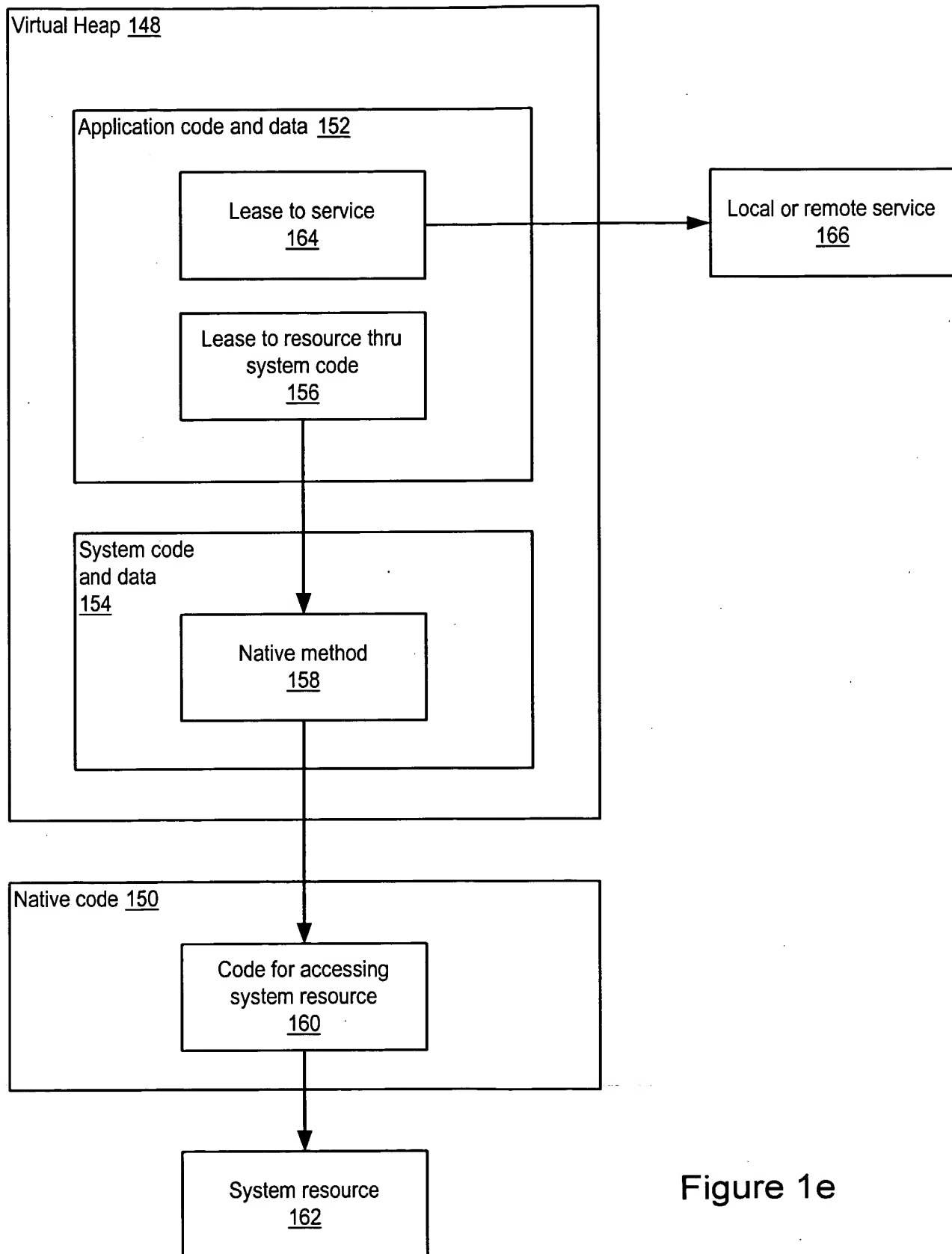


Figure 1e

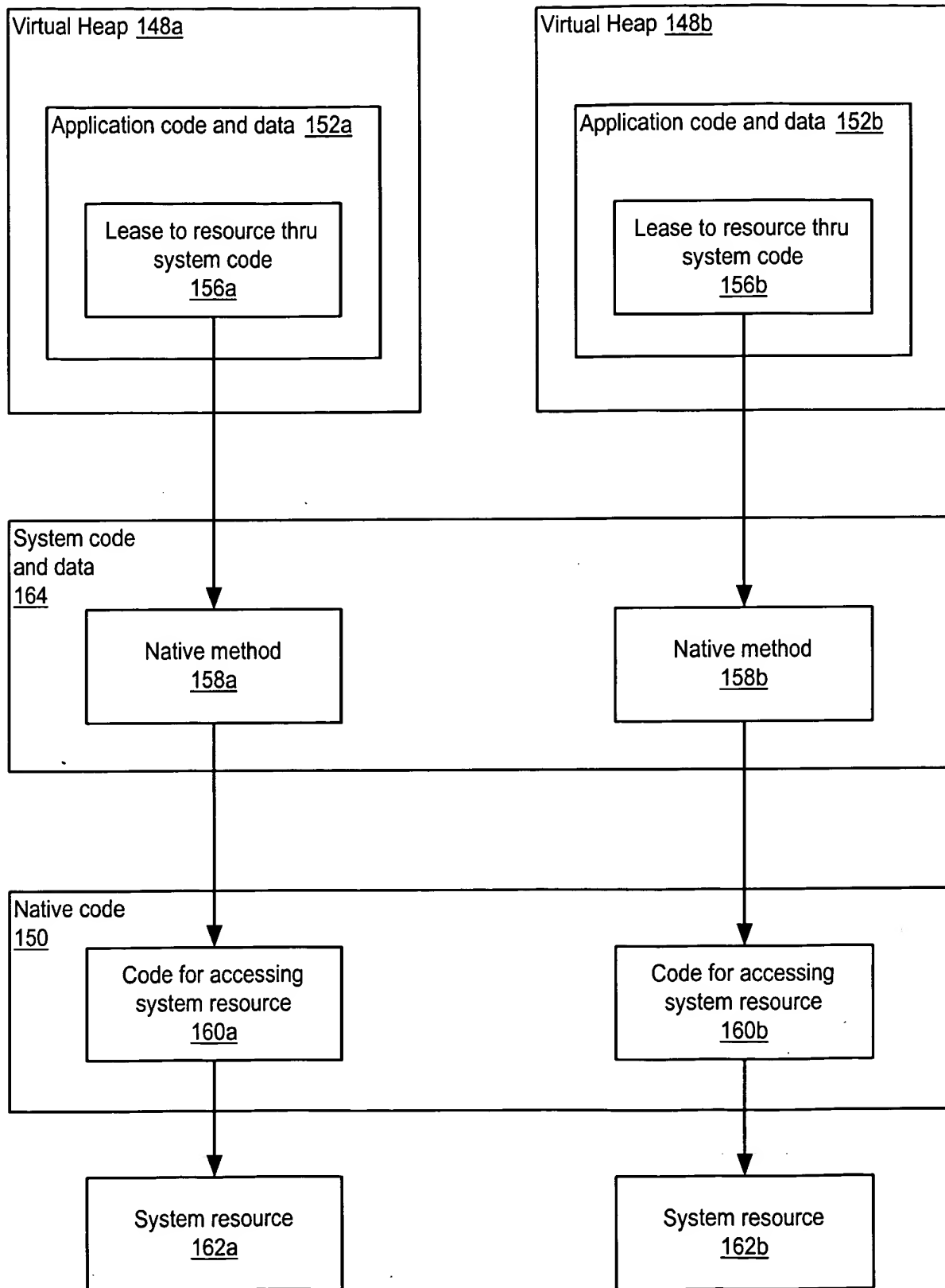


Figure 1f

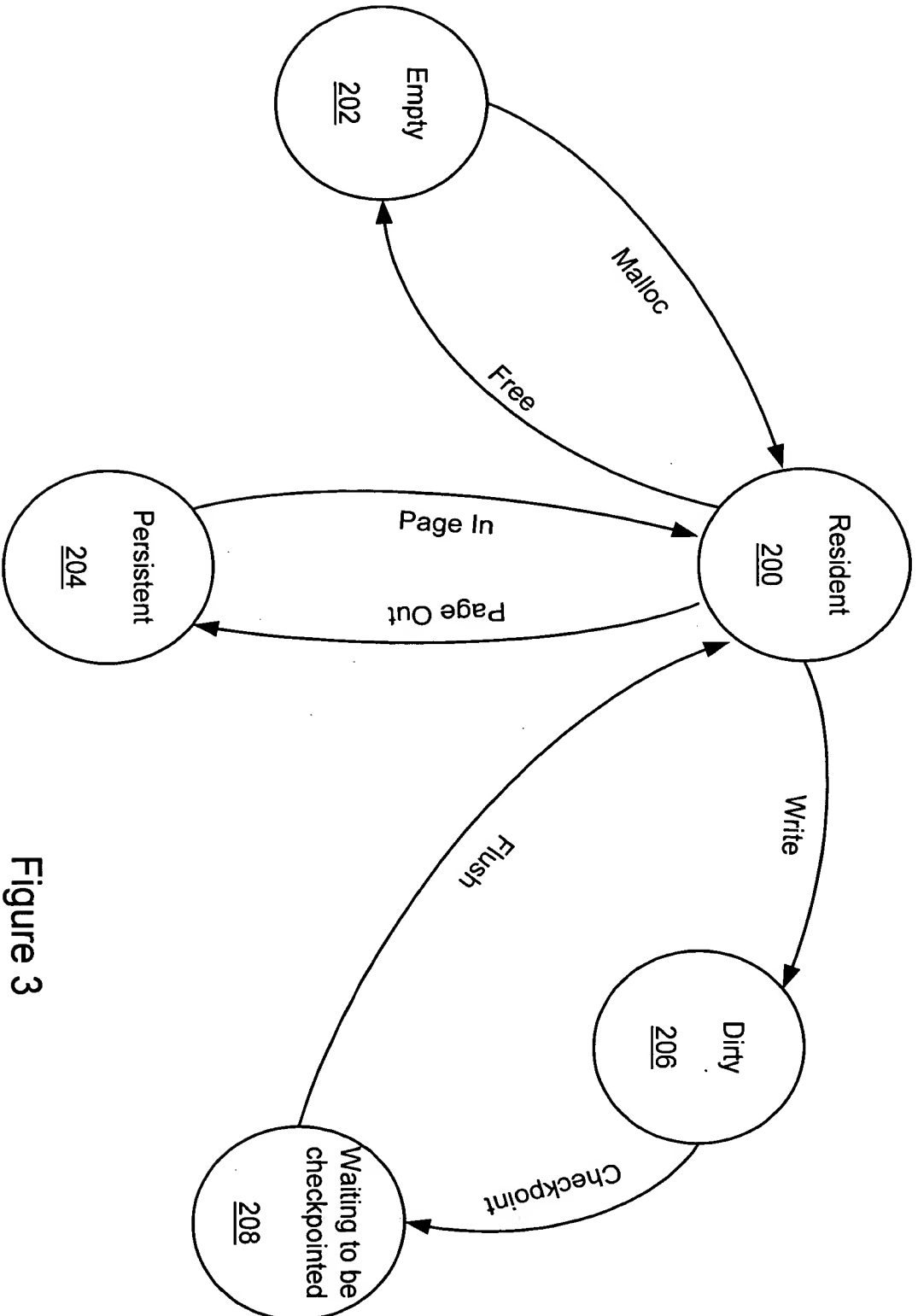


Figure 3

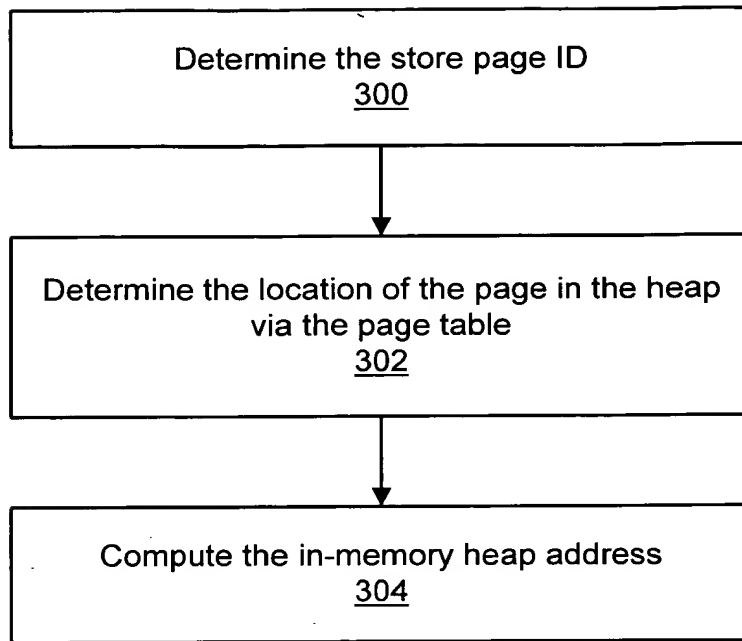


Figure 4

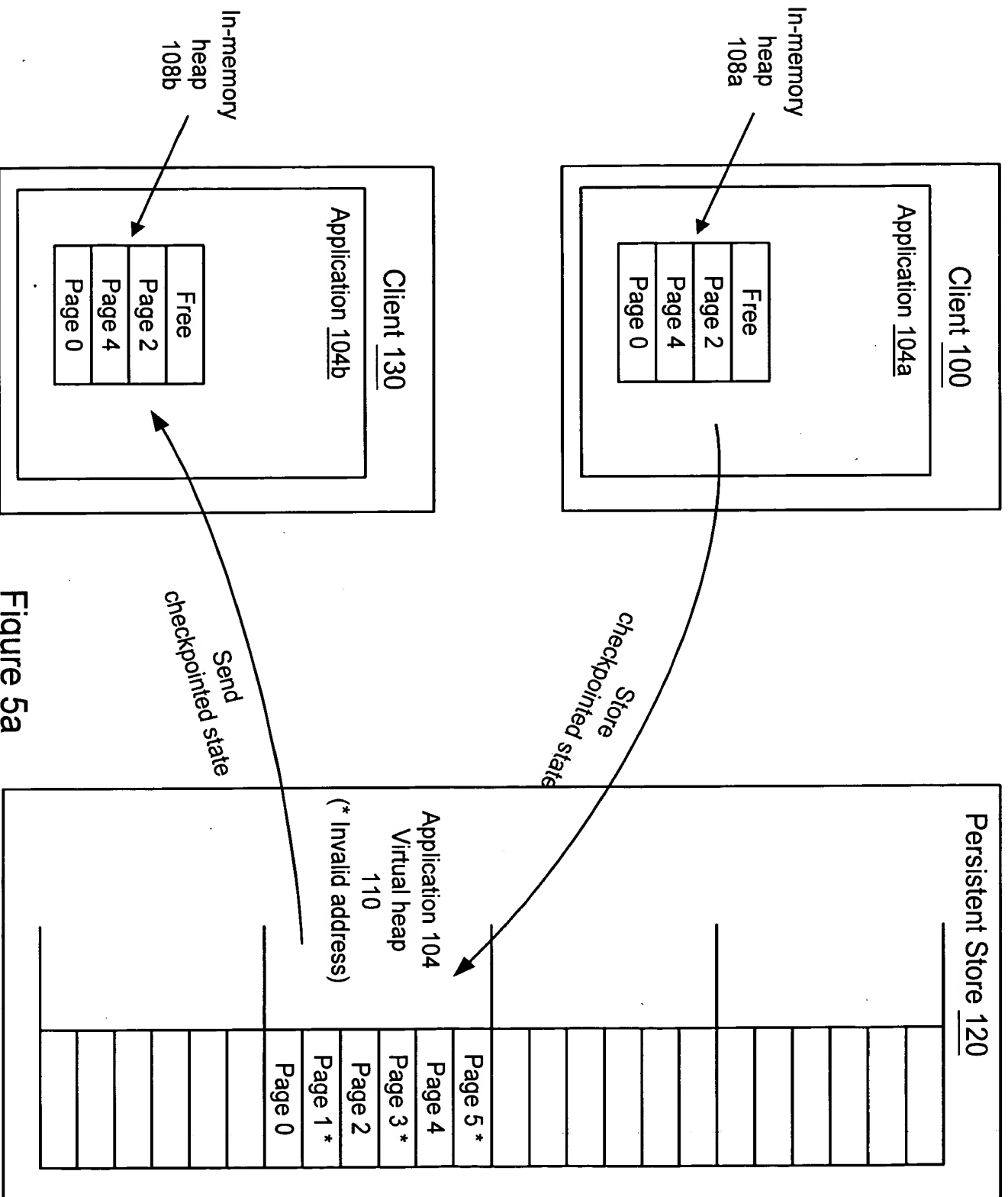


Figure 5a

FIG. 5a is a block diagram of a system architecture for a checkpointing system.

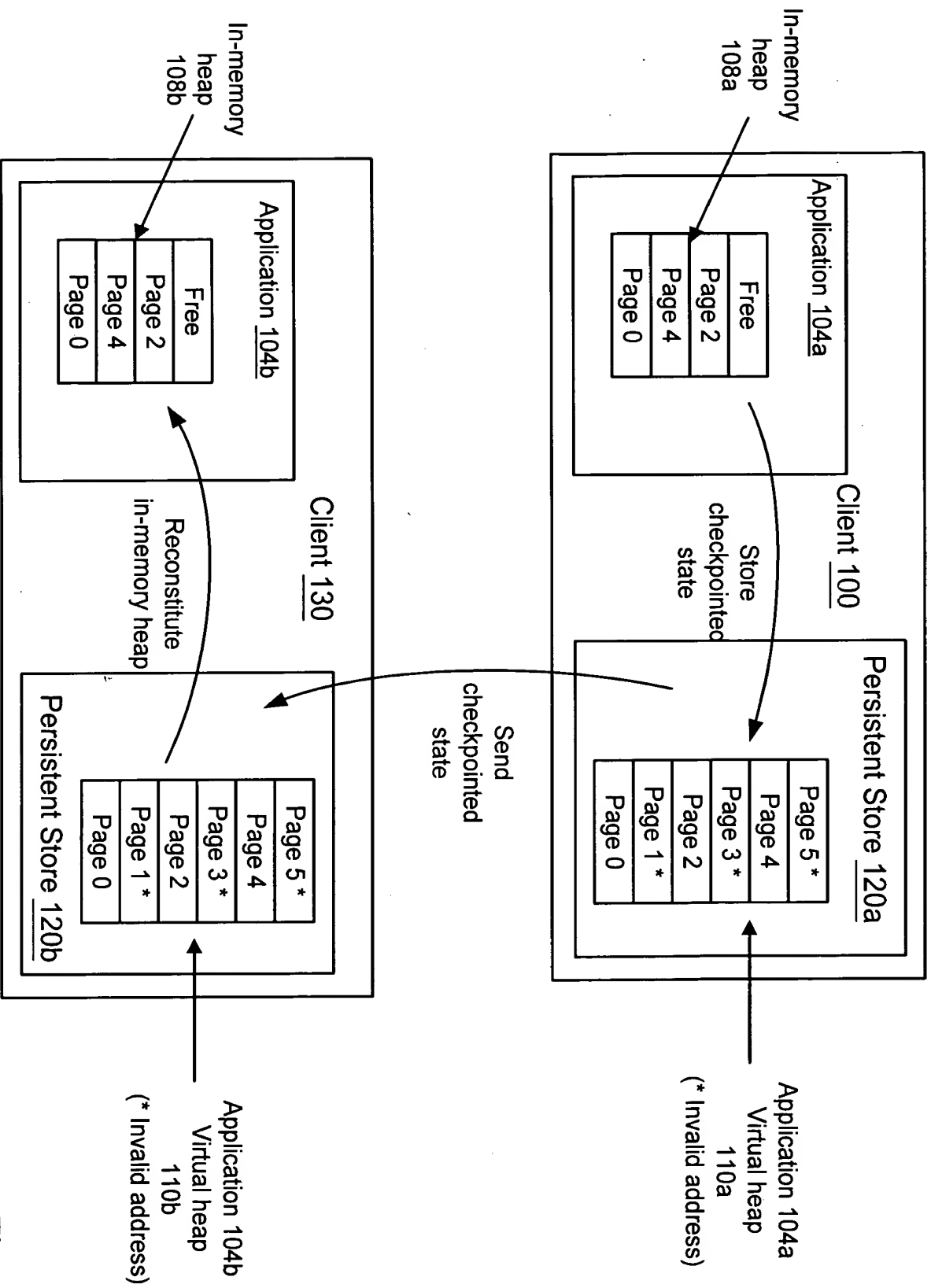


Figure 5b

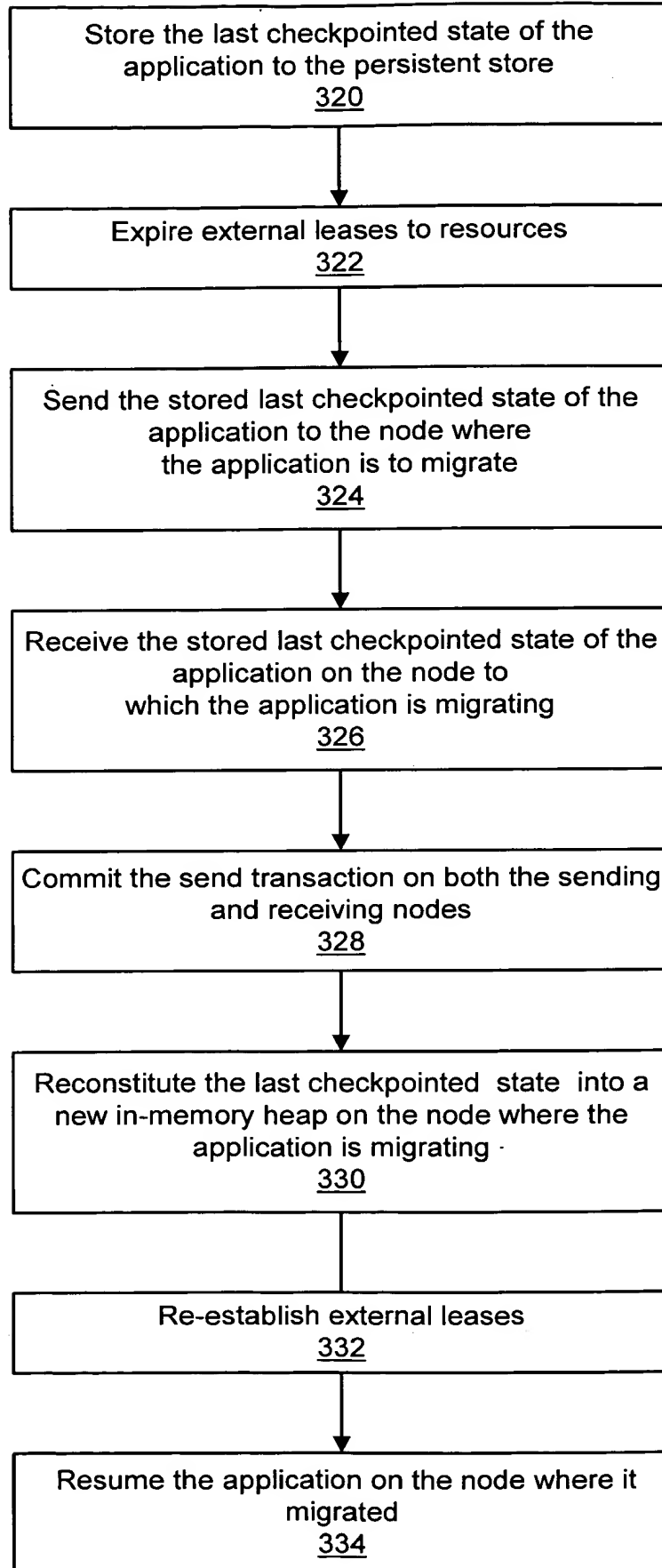
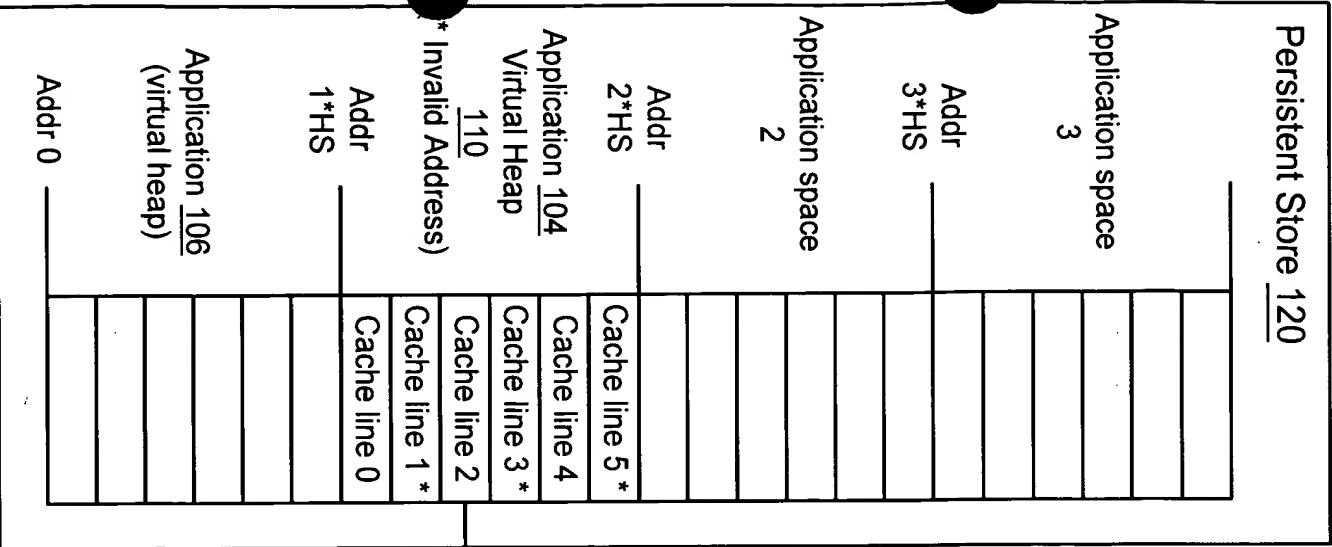


Figure 6



HS: Heap Size
CS: Cache Line Size
R: Resident
D: Dirty
F: Flush

Cache Table <u>122</u>					Heap Cacge line ID	
Page	R	D	F			
0	1	0			0	
1	0					
2	1	1			2	
3	0					
4	1	1				1
5	0					

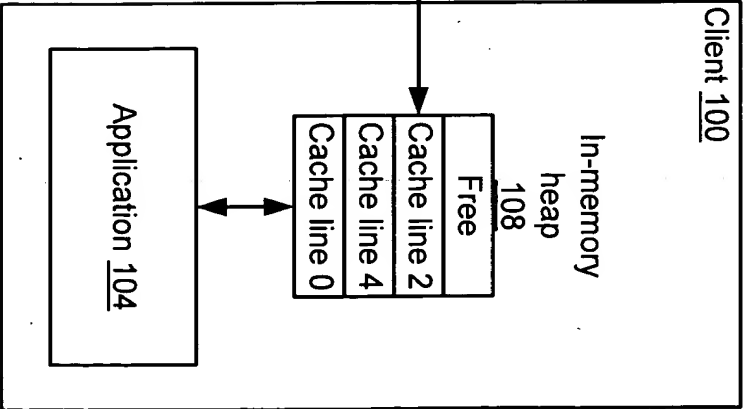


Figure 7

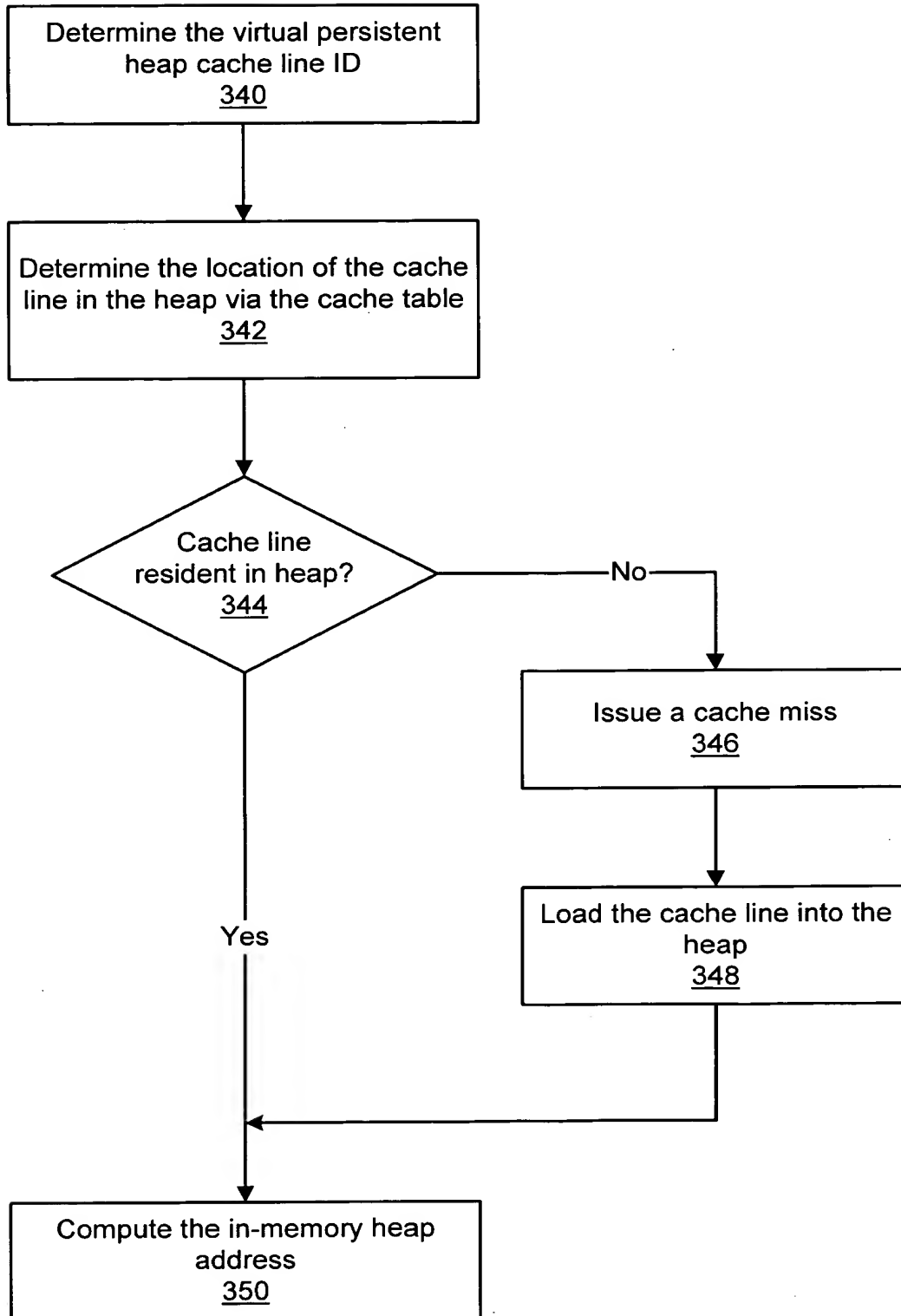


Figure 8

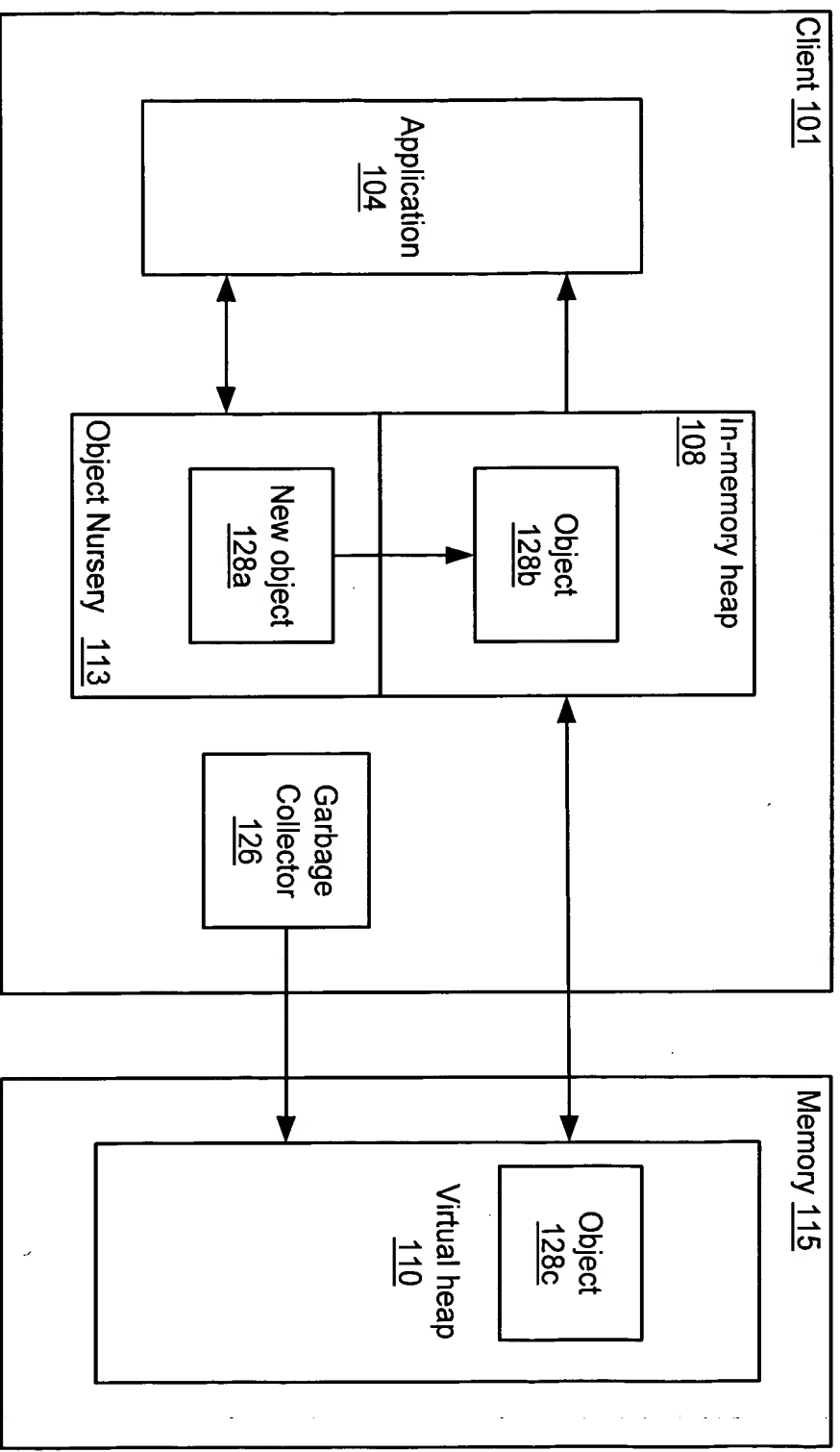


Figure 9

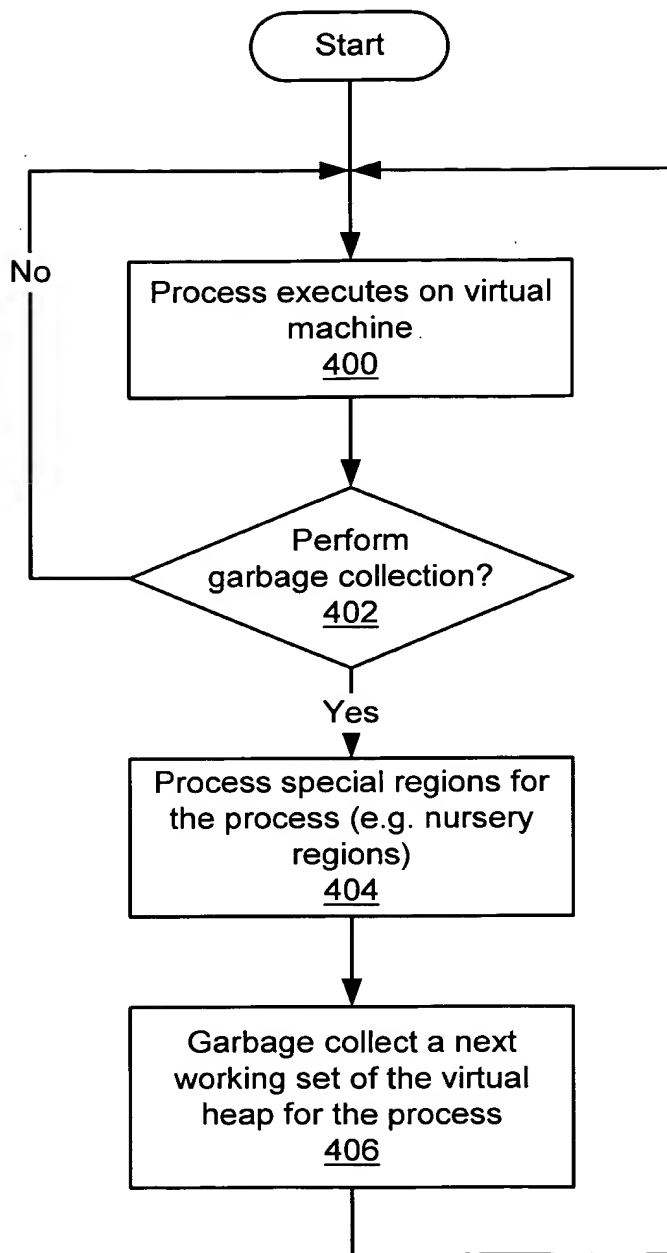


Figure 10a

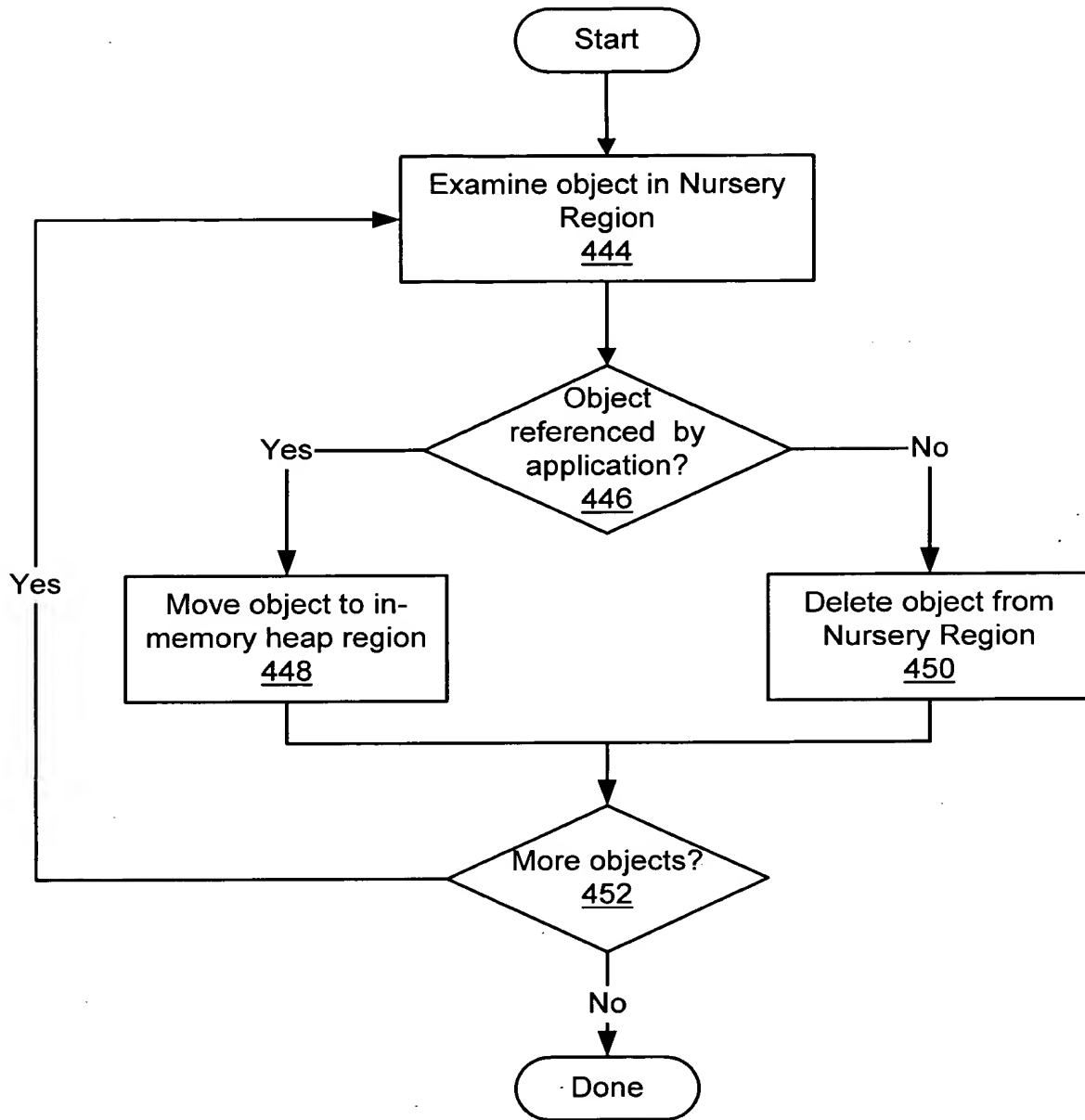


Figure 10b

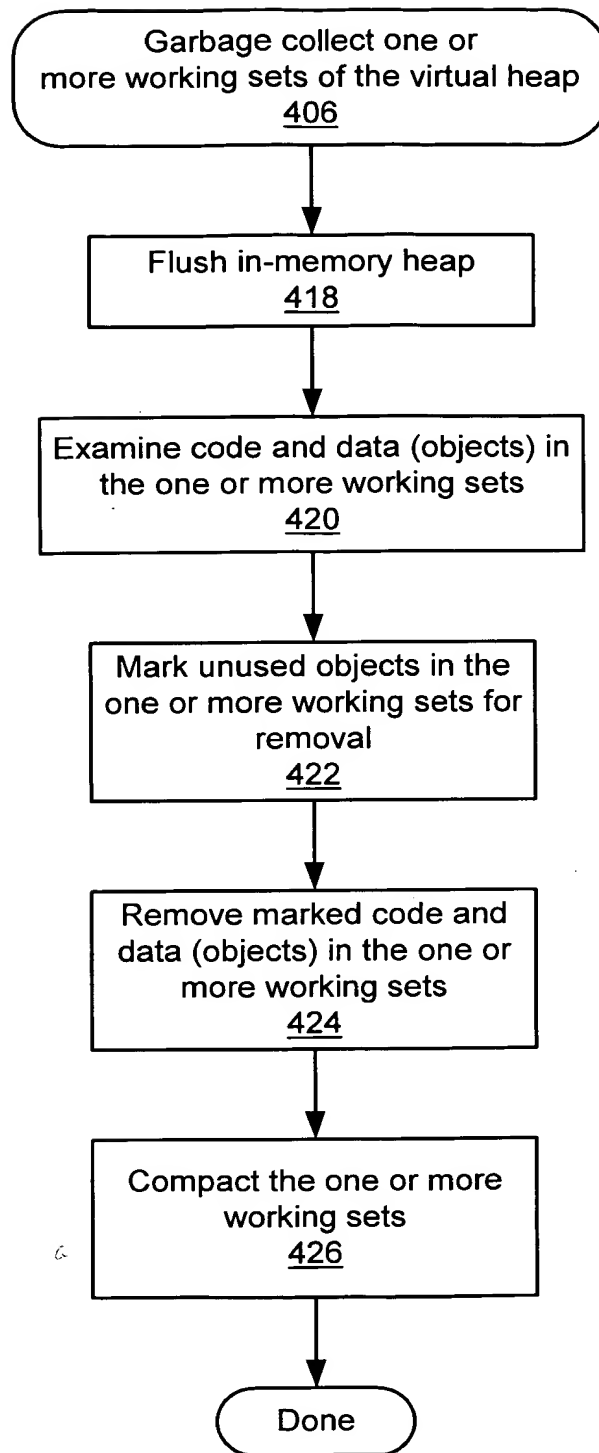


Figure 10c

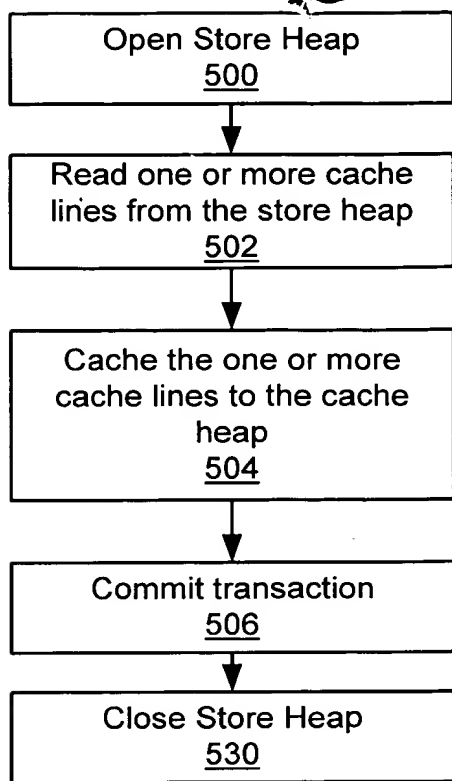


Figure 11a

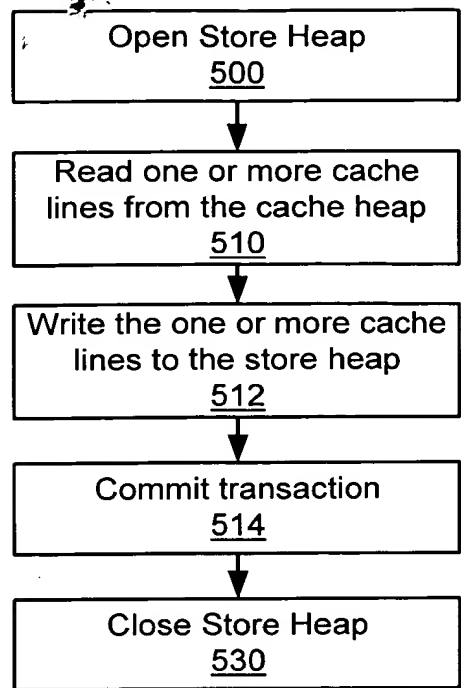


Figure 11b

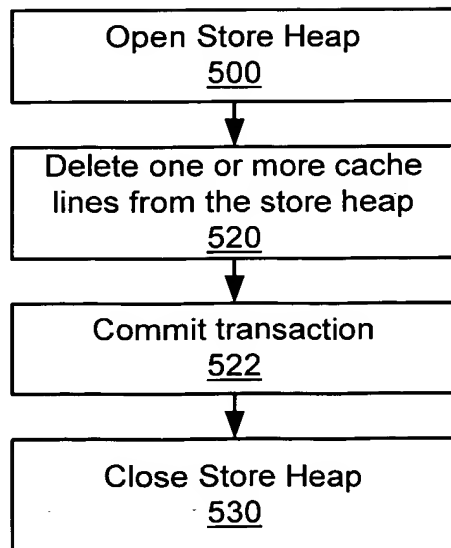


Figure 11c